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Awareness of the Concept of Sustainable Development Principles among Building Construction Professionals in Asaba, Nigeria

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Abstract

The concept of Sustainable Development (SD) has gained popularity and prominence in theory, but it tends to be misunderstood. The conflict between theory and practice lies in the misconception of sustainable construction in Africa, with Nigeria being no exception. Therefore, the study examined the level of awareness of SD and its principles among building construction professionals in Asaba, Delta State. The study adopted a survey research design, which involved the use of questionnaires and interviews. A total of 84 questionnaires were administered, but only 68 responses were validated for analysis. Data collected were analyzed using the Relative Importance Index (RII). The study found that most respondents and professionals are aware of the concept of Sustainable Development and its principles in the study area, which corresponds to an RII of 1.0. Despite this awareness, the concept of SD tends to be neglected and underplayed in Asaba, Delta State, Nigeria. Consequentially, sustainable development and sustainability are not adequately addressed during construction phases. Based on these findings, it is concluded that the concept of SD is not well understood or fully appreciated by professionals in the study area. As a result, the concept remains normative, subjective, and ambiguous to them. Therefore, it is recommended that construction regulatory bodies, professional associations, and institutions of higher learning promote and organize training, education, and sensitization programs focused on SD principles in construction practices. Such initiatives would enhance the existing knowledge of construction professionals regarding SD.

Keywords:
Awareness, Sustainable Development, Building Professionals, Asaba, Nigeria.

INTRODUCTION

The concept of Sustainable Development (SD) has gained popularity and prominence in theory, which tends to be misunderstood, forborne and underplayed in the evolution of the concept (Ezeokoli, Ehimioboh, Okoye, & Okekezie 2023; Mensah, 2019). While evolution might seem unimportant to some people, it is intended to help predict the future trends and flaws and, therefore, provide useful guides now and for the future (Elkington, 1999). Jain and Islam (2015) stated that the Brundtland report engendered the United Nations Conference on Environment and Development (UNCED, known as Rio Earth Summit in 1992). According to the report, SD can be defined as the development that meets the need of the present without conceding the ability of future generations to meet their own needs (WCED 1987). Acknowledging and recognizing the pervasiveness of the definition by WCED, Cerin (2016) and Abubakar (2017) argue that SD is a core concept with global development, policy and agenda. According to Mensah (2019) SD provides a mechanism through which society can interact with the environment to meet the present needs without damaging the resources for the future.

Sustainable construction has not received sufficient attention in Africa even though it is an important aspect of sustainable development, in terms of incorporation of SD principles in construction projects (Ezeokoli, Ehimioboh, Okoye, & Okekezie 2023; Adebayo, 2002). Adebayo maintained that the conflict between theory and practice is the misconception of sustainable construction in Africa relative to the level of development in different countries such as the trend of the global ideology, advanced technology, standards and methods of operation. In Nigeria, sustainable construction practices are still in the early stages of development, but there is a growing interest in adopting green building technologies and sustainable materials (Ehimioboh, 2022; Adeboye, 2020). Previous studies have highlighted the need for a comprehensive and national awareness, training and framework that considers the unique context and challenges of the Nigerian construction industry as regards SD in building construction (Ehimioboh, 2022; Akinade, 2015).

As Asaba, the capital city of Delta state is experiencing rapid urbanization and infrastructural development, leading to an increased demand for construction activities (Oke, 2017). However, the building industry is a significant contributor to environmental degradation, resource depletion, and social inequality (Adeboye, 2020). The lack of a comprehensive awareness and information on the concept of SD for encouraging sustainable construction practices in Delta state aggravates these challenges, hindering the achievement of sustainable development goals and threatening the environmental, social, and economic well-being of the state (Oke, 2017). The gaps in the regulatory environment and challenges in enforcing existing standards have led to inconsistent application of sustainable practices (Okoroh, 2020; Ebhomenye, 2020). This shift is critical in Asaba, where the environmental impacts of construction works are significant due to the region's unique geographical and climatic conditions. To address these challenges and promote sustainable construction, a comprehensive knowledge and framework tailored to the specific needs of Delta state must be developed. Therefore, the study examined the level of awareness of SD and its principles by building construction professionals in Asaba, Delta State.

LITERATURE REVIEW

Sustainable Development

Sustainable development (SD) has become a global phenomenon in development discourse, having been associated with different definitions, meanings and interpretations. Taken literally, SD would simply mean "development" that can be continued either indefinitely or for the given time (Stoddart, 2011; Dernbach, 2003, 1998). Structurally, the concept can be seen as a phrase consisting of two words, "sustainable" and "development." Undoubtedly, it has been defined from various perspectives, the concept of SD has also been looked at from various angles, leading to a plethora of definitions of the concept. Although definitions abound with respect to SD, the most often cited definition of the concept is the one proposed by the Brundtland Commission Report (Schaefer & Crane, 2005).

Brundtland Commission Report (1987) defines SD as development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs. Acknowledging the pervasiveness of WCED's definition, Cerin (2006) as well as Abubakar (2017)

argues that SD is a core concept within global development policy and agenda. It provides a mechanism through which society can interact with the environment while not risking damaging the resource for the future. Thus, it is a development paradigm as well as concept that calls for improving living standards without jeopardizing the earth's ecosystems or causing environmental challenges such as deforestation, water pollution and air pollution that can result in problems such as climate change and extinction of species (Amiolemen and Omoyajowo, 2016; Browning & Rigolon, 2019; Benaim & Raftis, 2008). Conversely, SD is an approach to development which uses resources in a way that allows them (the resources) to continue to exist for others (Mohieldin, 2017). Evers (2017) further relates the concept to the organizing principle for meeting human development goals while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depend. Considered from this angle, SD aims at achieving social progress, environmental equilibrium and economic growth (Zhai & Chang, 2019; Gossling-Goidsmiths, 2018).

Exploring the demands of SD, Ukaga *et al*., (2011) emphasized the need to move away from harmful socio-economic activities and rather engage in activities with positive environmental, economic and social impacts. Mensah (2019) carried out a study on 'Sustainable development: Meaning, history, principles, pillars, and implications for human action: Literature review'. The study argued that Sustainable development (SD) has become a popular catchphrase in contemporary development discourse. However, in line with Mensah's, despite its pervasiveness and the massive popularity it has garnered over the years, the concept still seems unclear as many people continue to ask questions about its meaning and history, as well as what it entails and implies for development, theory and practice. The purpose of Mensah's research was to contribute to the discourse on SD by further explaining the paradigm and its implications for human thinking and actions in the quest for sustainable development. Mensah's study finds and argues that the entire issue of sustainable development centres around intra-generational and intergenerational equity anchored essentially on three-dimensional distinct but interconnected pillars, namely the environment, economy, and society. Mensah, also suggest that decision-makers need to be constantly mindful of the relationships, complementarities, and trade-offs among these pillars and ensure responsible human behaviour and actions at the international, national, community level respectively.

Hák *et al*. (2016) maintain that, conscious of this phenomenon, global concerns have always been expressed for judicious use of the available resources so that it will always be possible to satisfy the needs of the present generation without undermining the ability of future generations to satisfy theirs. It implies that SD is an effort at guaranteeing a balance among economic growth, environmental integrity and social well-being. This reinforces the argument that, implicit in the concept of SD is intergenerational equity, which recognizes both short and long-term implications of sustainability and SD (Stoddart, 2011; Dernbach, 1998). According to Kolk (2016), this is achievable through the integration of economic, environmental, and social concerns in decision-making processes. However, it is common for people to treat sustainability and SD as analogues and synonyms, but the two concepts are distinguishable. According to Diesendorf (2000) sustainability is the goal or endpoint of a process called sustainable development. Gray (2010) reinforces the point by arguing that, while "sustainability" refers to a state, SD refers to the process for achieving this state.

History of Sustainable Development

Although the concept of SD has gained popularity and prominence in theory, what tends to be ignored and downplayed is the history or evolution of the concept. While evolution might seem unimportant to some people, it nonetheless could help predict future trends and flaws and, therefore, provide useful guide now and for the future (Elkington, 1999). According to Pigou (1920), historically, SD as a concept derives from economics as a discipline. The discussion regarding whether the capacity of the Earth's limited natural resources would be able to continually support the existence of the increasing human population gained prominence with the Malthusian population theory in the early 1800s (Dixon & Fallon, 1989; Coomer, 1979). As far back as 1789, Malthus postulated that the human population tends to grow in a geometric progression, while subsistence could grow in only

an arithmetic progression, and for that matter, population growth was likely to outstrip the capacity of the natural resources to support the needs of the increasing population (Rostow & Rostow, 1978). Therefore, if measures were not taken to check the rapid population growth rate, exhaustion or depletion of natural resources would occur, resulting in misery for humans (Eblen & Eblen, 1994). However, the import of this postulation tended to be ignored in the belief that technology could be developed to cancel such an occurrence. With time, global concerns heightened about the non-renewability of some natural resources which threaten production and long-term economic growth resulting from environmental degradation and pollution (Paxton, 1993). This reawakened consciousness about the possibility of occurrence of Malthus' postulation and raised questions about whether the path being chattered regarding development was sustainable (Kates *et al*., 2001). Similarly, Kates *et al*. (2001) examine whether the paradigm of global economic development was "sustainable".

Meadows studied the Limits to Growth in 1972, using data on growth of population, industrial production and pollution. Meadows concluded that "since the world is physically finite, exponential growth of these three key variables would eventually reach the limit" (Meadows, 1972). However, several academicians, researchers and development practitioners (Dernbach, 2003; Paxton, 1993) argue that the concept of sustainable development received its first major international recognition in 1972 at the UN Conference on the Human Environment held in Stockholm. According to Daly (1992) and Basiago (1996), although the term was not referred to explicitly, the international community agreed to the notion—now fundamental to sustainable development—that both development and the environment hitherto addressed as separate, issues could be managed in a mutually beneficial way. Following these developments, the World Commission on Environment and Development, chaired by Gro Harlem Brundtland of Norway, renewed the call for SD, culminating in the development of the Brundtland Report entitled "Our Common Future" in 1987 (Goodland & Daly, 1996).

As already mentioned, the report defined SD as development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs. Central to the Brundtland Commission Report were two key issues: the concept of needs, particularly the essential needs of the world's poor (to which overriding priority should be given); and the idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs (Kates *et al*., 2001).

Scope and Principles of Sustainable Housing

Achieving SD hinges in several principles. However, the principles of SD argued by Ji (2018) in his work on 'the evolution of the policy of environment for climate change migration in Bangladesh; and Mensah and Enukwesi (2018) in their work on the 'implication of environmental sanitation management in the catchment area of Benya Legion, Ghana, gravitates towards the economy, environment and society. They also identify that, specifically, they relate among others to the conservation of ecosystem and biodiversity, production system, population control, human resources management, conservative of progressive culture and people participation.

Said, Osman, Shafei, Razak & Kooi (nd.) in their work on sustainability in the housing development among construction industry players in Malaysia argued that sustainable development concepts revolving around policies of economic; environmental and social have been widely discussed in the worldwide scale. The housing industry by nature is multi-faceted, consumes natural resources and produces impact on the natural environment. In line with Said, et al., it constitutes economic activities and impacts on the economy in such a way that it is an important component of social development and quality of life. The study attempts to identify the elements of sustainable development level of awareness among key players in the housing industry (being the client, professionals and contractors). Using quantitative research techniques and observed that the sustainable housing development concept is still new and few. The demand for SD is perceived as 'always there' but the implication is very poor because of lack of awareness among the key players in the housing industry. The study therefore suggested and recommended that the level of understanding on sustainable housing development concept such as encouraging all parties in the industry, existing laws and acts on sustainability

should be reviewed and subsequently proper enforcement should be carried out to ensure success of implementation.

METHODOLOGY

The research was design in a way as to be able to determine the awareness of sustainable construction principles by professionals in the built environment in Asaba, Delta state, Nigeria. For this study, mixed approach method was adopted.

The research used survey design in the form of structured questionnaires and interviews to obtain data from the field. The research is delimited to Asaba, Delta State. The interview involved verbal discussions with participants from the building professionals. Two participants from each profession were selected. This is to ensure convenience. The purpose of the focus group interview/discussion was to supplement the questionnaire and to retrieve information that could not be included in the questionnaire. The population of this study includes key professionals, involved in the built environment. They include Architects (20), Builders (15), Civil/Structural and Engineers (17) and Quantity Surveyors (10), Town planners (10), Estate Surveyor and Valuers (12). The population of each profession was sourced from their respective state secretariats, which represent eighty-four (84) registered professionals in the study area. The population was maintained and used for the study due to its small size. The validity of the instrument was established by the researchers who carried out both the fact and content validation of questionnaire. To determine the reliability of the instrument, the researcher pilot-tested the questionnaires on a small sample group and personally administered them to thirty (30) building construction professionals.

The breakdown of questionnaires distributed, and the percentage collected are 68 questionnaires were returned valid and 16 non-responses constituting 81% and 19% respectively. Respondent were asked to rate their perception regarding the importance of these strategies using a frequency distribution table and a five (5) point's Likert scale of 1-5. Where 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree. Data was analyzed using Relative Importance Index (RII). RII is a statistical method used to quantify the relative importance of various factors or variables in a study.

RII = (weighted score/maximum possible score) x 100

DATA PRESENTATION AND ANALYSIS

This shows the presentation and analysis of data obtained from field survey, interview and discussion of findings from the results of the analyses of the data. The data contained in the study have been collected and systematically explained in conformity with the method. Based on this, this section is structured into two sub sections.

1. Presentation and Analysis of interview.
2. Presentation and analysis of questionnaires.

Summary of Interview

This section presents the summary of information retrieved from the interviewees (Building Professionals), by researcher in the cause of this present study. Accordingly, the study organized a focused group interviews/discussion with 14 professionals.

What do you understand about Sustainable Development?

Sustainable development according to the interviewees remains a relevant organizing principle in this modern era which has become a useful concept to countries that are concerned about the deterioration of the environment and natural resources. This concept has gained significance across global, regional, sub-regional and local levels over the past few decades. It is viewed as a strategy for utilizing available resources to promote development in an efficient and sustainable manner, addressing current needs without compromising the ability of future generations to meet their own.

What is Sustainable construction?

They believe that socio-cultural, economic and environmental degradation must be tackled in a more integrated and holistic way by addressing problems faced within the ecosystem, which housing projects are a major part of the built environment. Housing projects must be constructed in a way to integrate all pillars of SD which sustainable housing tends to address. Sustainable development according to the interviewees can be translated into useful strategies that can solve specific problems or minimize the negative impact brought upon by specific cultural, social, economic

and environmental issues faced by people across the world.

What is the Level of SD incorporation in construction projects in the study area?
They agreed that some aspects of SD principles are being incorporated into the design and construction of housing projects. Although regrettably the compliance and incorporation of SD principles has not fully been integrated and incorporated into the housing sector in the study area.

What are the barriers of SD in the study area?
This according to them could be linked to key barriers such as rising poverty, lack of consciousness of SD phenomenon, corruption and maladministration and government unimplemented policies on SD.

What are the drivers of SD in the study area?
They further identified key drivers to promote SD in the housing sectors as more education and awareness, tax incentives on sustainable building materials, and well-integrated formulated policies on SD and its implementation.

What is the Way forward?
They further suggest that all stakeholders have a specific role to play in ensuring the compliance of SD principles in housing. Therefore, professional need to adopt and promote sustainable construction practices through their work. The housing sector needs to commit to sustainable construction processes, regulatory bodies need to encourage, enable and enforce sustainable housing projects. If all these stakeholders are to fulfill their role, the educational sector must provide them with the necessary training and with educators and researchers who themselves are committed to sustainability.

Level of awareness of the concept of sustainable development (SD) and its principles: This section examined the awareness of SD principles by construction professionals and how it is perceived by the respondents in the study area.
The information presented in Table 1 shows the responses of the respondents on the level of awareness of SD and its principles by key professionals in the building construction industry. Since SD is the development that meets needs of the present without limiting the ability of future generations to meet their own needs, this resulted in an RII of 100%, indicating that professionals agree with the definition of SD, as defined by WCED, 1987. This is in line with Ezeokoli, Ehimioboh, Okoye, & Ekekezie 2023; Ehimioboh, 2022; WCED, 1987; Mensah, 2019; Abubakar, 2017. This highlights the need for awareness of this phenomenon (SD) and an RII of 1.0 means that 100% of the respondents agree that there is need to raise awareness of the phenomenon SD, which is in line with the findings of Hak, 2016; Kate, 2001. The principles of sustainable development include (environmental, social and economic) but also other areas such as cultural, political and institutional and the concept of SD principles by various stakeholders in the study area had an RII of 1.0, indicating that about 100% of the respondents agreed with the perception of the need for more SD for housing projects, which also corroborates the assertion of Evers, 2017; WCED, 1987 and Mensah, 2019. The concept SD tends to be neglected and undervalued in the development of the concept in Asaba, Delta State, Nigeria. The RII value was 1.0, indicating that 100% of the respondents agreed that the concept of SD is somewhat undervalued and neglected in the study area. This is in line with Adebayo (2001); Diesendorf (2000) that the term "sustainability" is controversial because it is multi-faceted, normative, distorted and vague. The RII of 1.0 clearly shows that 100% of the respondents agreed that the concept of SD is ambiguous, subjective and complex. This response clearly agrees with the research of Ehimioboh, (2022); on perception of construction stakeholders. The most profitable way to develop and maintain a world-class building stock in the future is to incorporate sustainability principles into all parts of the housing construction process had an RII of 1.0, meaning that 100% of respondents agreed that SD should be more integrated and included in housing projects in the study area. Sustainability is the goal or end point of a process called sustainable development had an RII of 1.0, which means that 100% of the respondents strongly agreed that incorporating the principles of SD in housing projects is aimed at achieving sustainability in the delivery of housing projects. This means that 100% of professionals and supervisors agreed with the questions on SD. This shows that professionals in the built environment in the study area have a clear understanding of the concept of SD and its

Table 1: Level of Awareness of Sustainable development (SD) Principles among Construction Professionals in the Study Area

Perception	Frequency					RII
	5	4	3	2	1	
SD is the development that meets the need of the present without conceding the ability of future generations to meet their needs.	68	0	0	0	0	1.0
There is need for consciously gauge the concept of sustainable development (SD)	68	0	0	0	0	1.0
Sustainable development principles include (environmental, social and economic), but other fields can also be added as cultural, political and institutional.	68	0	0	0	0	1.0
The concept SD tends to be neglected and underplayed in the evolution of the concept in Anambra state, Nigeria.	68	0	0	0	0	1.0
It is common for people to treat sustainability and SD as analogues and synonyms, but the two concepts are distinguishable.	68	0	0	0	0	1.0
Sustainability is a contested concept because it is inherently complex, normative, subjective and ambiguous.	68	0	0	0	0	1.0
It is this deeply fixed concept of integration that distinguishes sustainability from other forms of policy.	68	0	0	0	0	1.0
The most cost-effective way to develop and maintain a high-quality housing stock in the long term is to incorporate principles of sustainability into all parts of the housing development process	68	0	0	0	0	1.0
Given the multi-faceted nature of housing, the environmental, economic, social and cultural dimensions, housing can enhance global and local sustainability and environmental protection.	68	0	0	0	0	1.0
Sustainability is the goal or end point of a process called sustainable development.	68	0	0	0	0	1.0
Sustainability in housing seeks to address the sustainability of environmental, economic, social and cultural concerns on housing project delivery.	68	0	0	0	0	1.0

Source: Authors field survey (2024). Where 5 = Strongly Agree, 4 = Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree; Relative Importance Index (RII)

principles. This is a plus point on the road to achieving SD in the construction sector in the study area and is in line with Ezeokoli *et al*. (2023); Ehimioboh (2022); Gray (2010); on the importance of sustainable housing. The 100% response to the questions on SD and its principles clearly shows that the key building professionals in the study area understand the concept well.

From the information presented in Table 1, it could be seen that 100% of professionals in the built environment agree on the issues raised concerning SD. This revealed that professionals in the study area are aware of the concept of SD. Hence, it's a plus in achieving SD in the building sector in the study area.

CONCLUSION

Based on this present finding, majority of respondents and professionals in the study area are aware of the concept of Sustainable Development and it principles. However, despite the awareness, the concept of SD is often neglected and undervalued in Asaba, Delta state, Nigeria. This neglect results in inadequate consideration of sustainability issues during construction phases. Consequently, it can be concluded that the concept of SD is not well understood or appreciated by professionals in the study area, rendering it normative, subjective and ambiguous to them. To address these issues, it is recommended that the construction regulatory bodies, construction professional associations and institutions of higher learning promote and organize training, education, and sensitization programs focused on SD principles in construction practices. Such initiative would enhance the existing knowledge of construction professionals regarding SD.

Furthermore, additional research is necessary to assess and measure the level of building

development in relation to the various dimensions and pillars of sustainable development.

Data availability statement: All data generated or analyzed during this study are available for sharing when appropriate request is directed to the corresponding author.

Ethics statement: Not applicable.

Author contributions: COE conceived the idea, designed the methodology, collected and analyzed data, drafted the manuscript, provided feedback on the manuscript, and revised it critically for important intellectual content. NUO-contributed to data collection and provided input on the manuscript for revision. PO-assisted with data analysis, reviewed the literature and provided input on the manuscript revision. FE-provided input on the manuscript revision and approved the final version. All authors read and approved the final manuscript.

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